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sepals, alternating in whorls, and very handsome. Woods near Hobart.—*Rubus triflorus* Richardson. White fruited. Quite a patch in the pine woods at Pine Station.—*Calopogon pulchellus*, R. Br. White flowered. Clarke Station.—E. J. HILL, *Englewood, Ill.*

Reproduction in Ferns.—Mr. W. T. Thiselton Dyer, in *Nature*, refers to a most interesting discovery recently made by Mr. E. T. Drury. A variety of *Asplenium filix-femina* was discovered upon which the sporangia developed into prothallia bearing antheridia and archegonia. Mr. F. O. Bowen also found an *Aspidium* in which the apex of the pinnules developed in the same way. Aposporous ferns are looking very strongly towards phanerogams. The same writer sums up the progress of discovery in reproduction of ferns in the following concise and instructive way: Observed seedling plants near parents, Gerarde (1597); Sporangia, Cæsius (1648); Spores, Cole (1669); Hygroscopic movements of sporangia, Ray (1686); Raised seedlings from spores, Morison (1715); Prothallium, Ehrhart (1788); Germination of spores, Lindsay (1789); Development of prothallium, Kaulfuss (1827); Antheridia, Nägeli (1844); Archegonia, Suminski (1846); Apogamy, Farlow (1874); Apospory, Drury (1884).

EDITORIAL NOTES.

MR. SERENO WATSON is collecting in Guatemala.

MR. F. LAMSON SCRIBNER, in *Proc. Philad. Acad.*, p. 289, 1884, describes, with plate, a new species of *Cinna*.

A NEW WORK on methods of bacteria investigation as conducted by the most eminent bacteriologists is announced by Cassino & Co. The author is Dr. C. S. Dolley.

FRANK BUSH and Cameron Mann have published a supplement to their catalogue of the plants of Jackson County, Missouri, which carries the number of species from 609 to 905.

HEDWIGIA, the German cryptogamic journal, edited by Dr. Winter, has just completed its twenty-third volume, and announces that it will hereafter be much enlarged and improved, and the subscription price increased to 8½ marks.

THE LIBRARY of the late Charles Downing, the eminent horticulturist, has become the property of the Iowa Agricultural College by bequest. This is a valuable acquisition, and a choice compliment to the horticultural department of the college.

DR. M. C. COOKE announces in *Grevillea* that he is now engaged on a monograph of the genus *Polyporus*, to be based upon a personal examination of each species so far as possible, and to contain a full description of the species with spore measurements and critical notes. A preliminary list of 261 species is given.

WE LEARN from *Science* that Montreal is to have a fine botanic garden under the joint control of McGill University and the Horticultural Society. Professor D. P. Penhallow is entrusted with controlling influence in the execution of the plans.

THE FIFTEENTH CENTURY of Ellis's North American Fungi is devoted to the parasitic species. There are 34 species of *Puccinia*, 18 of *Aecidium*, 7 of *Uromyces*, 17 of *Peronospora*, and 7 of *Entyloma*, the remaining species being distributed to 9 genera.

IN THE JOURNAL OF BOTANY for March, Mr. F. Townsend presents an illustrated paper to prove "that the pale in the floret of grasses is the homologue of the ochrea and utriculus in *Carex*, and that the latter is a single floral envelope, therefore the pale is also single."

DR. J. T. ROTHROCK, at a recent meeting of the Botanical Section of the Philadelphia Academy, called attention to the internal cambium ring in the stem of *Gelsemium sempervirens*. The result was that the pith was constantly being encroached upon and finally almost disappeared.

OWING TO WORK for the New Orleans Exposition, Mr. A. H. Curtiss was prevented last season from preparing a new fascicle of Florida plants. He has been able, however, to collect sufficiently to offer what may be called a second issue of his first fascicle. It contains 240 species and is sold for \$18.

DRS. ASA GRAY and W. G. Farlow have been on a collecting tour through Mexico by way of the City of Mexico and Vera Cruz, and are now at Los Angeles, Cal., which is to be their principal stopping place. On the way to Vera Cruz they found the flora and scenery remarkably fine.

MR. JOHN ROBINSON read a very interesting paper last June before the Essex Institute, and published in their *Bulletin*, entitled "Botany in Essex County." The record is a rare one, and with such names as Cutler, Oakes, Pickering, Osgood, and Russell, it is no wonder that the science became popular.

THE WESTERN DRUGGIST comes to us from Chicago with a department of "Botany and Microscopy," under the direction of Prof. E. S. Bastin. The chief article under it is entitled "Directions for Preparing and Mounting Sections of Stems and Leaves." In another place Prof. Bastin gives an illustrated account of plant hairs.

THE JOURNAL OF BOTANY always brings to us descriptions of new species of plants. The February number contains descriptions of five new Desmids (with plate), a new *Carex* from Sumatra, a new *Loranthus* from China, and four new species of *Selaginella*. The synopsis of the last genus by Dr. Baker has now reached 232 species.

THE FIRST NUMBER of *Nuovo Giornale Botanico Italiano* for 1885 contains a continuation of the Veronese flora, by A. Goiran, a reply by F. Tassi to Prof. Luigi Macchiati in reference to the effect of anesthetics upon flowers, and an anatomical description (with four plates) of the inflorescence of the female flower of *Dioon edule* (a Cycad) by G. Cugini.

MR. J. REVERCHON will collect extensively in Western Texas this season, and if sufficiently encouraged, will undertake in subsequent years a thorough exploration of that very interesting region. We hope that all botanists who can will promise to Mr. Reverchon their share of support in this great undertaking. His address is 411 Houston street, Dallas, Texas.

IN THE CURRENT VOLUME of the Proceedings of the Philadelphia Academy, Dr. Gray makes some remarks upon Mr. Meehan's discovery of the retraction of the anther-tube in *Helianthus*. It is similar to that which takes place in the thistle tribe generally, but Dr. Gray claims that it is the "result of automatic or irritable shortening of the filaments," and not of the "elasticity of the filaments," which Mr. Meehan had suggested.

THE FIRST TWO numbers of the *Journal of the New York Microscopical Society* give excellent promise for this new venture. The number of journals shows that if in America microscopical science has not sent its roots down very deep, they are at least spreading widely. The new claimant for favor is well gotten up and well printed, and its matter interesting and appropriate. Only nine numbers a year are to be issued. We shall look to it for some valuable contributions to knowledge.

DR. A. C. ABBOTT, of Baltimore, Md., has offered a series of twelve slides of pathogenic bacteria, which we have examined with more than usual interest. They have been prepared from material furnished by Dr. G. M. Sternberg, the most noted American bacteriologist, and include several slides of *Bacillus Anthracis*, *B. tuberculosis*, and a number of species of *Micrococcus*, including that of swine plague. The fine slide of *B. Anthracis* showing spores will be especially appreciated by morphologists.

WALTER GARDINER, in a recent number of *Nature*, comments upon Dr. Schöarschmidt's paper on continuity of protoplasm, mentioned in our last issue. Among other things he points out that several eminent investigators have been led astray by the tests they have relied upon to demonstrate protoplasm in intercellular spaces. He believes that its existence has not yet been demonstrated, and that the substance mistaken for it is mucilage. As to interlamellar protoplasm he considers it simply impossible, as does also Russow.

LECLERC DU SABLON has studied the mechanism, as we learn from the *Botanisches Centralblatt*, by which the leaves of certain trees, e. g., beeches, oaks, hornbeams, etc., are retained on the tree long after they are dead. At about the time the leaves begin to change color, the base of the leaf-stalk for some two or three millimeters becomes lignified, and the cells and vessels thickened, offering complete obstruction to the passage of water. The leaves then dry up and remain so. They are pushed off in the spring by the swelling of the living tissue just underneath.

THE BULLETIN of the Royal Botanical Society of Belgium, for 1884, contains a paper (with two plates) by E. Bernimoulin, upon the division of the nuclei in *Tradescantia Virginica*. The breaking up into worm-like filaments is quite remarkable and the plant so easily obtained that these observations could

be readily verified in almost any laboratory. The parts used are pollen mother-cells, stamen hairs, and shreds of young epidermis, and the method of their treatment is fully explained. In the same volume a synoptical catalogue of the mycologic flora in the neighborhood of Brussels is given by E. Bommer and M. Rousseau. It occupies (with full index) some 350 pages.

CURRENT LITERATURE.

Bulletin of the California Academy of Sciences. No. 3. February, 1885.

This number is chiefly made up of botanical papers of considerable importance, and contains thirteen botanical plates, most of them colored. Mr. Edward Lee Greene, in a paper entitled "Studies in the Botany of California and Parts Adjacent," describes many new species and some new genera, and gives a synopsis of certain groups. A new *Vancouveria* from Oregon is described, five new species of *Eschscholtzia*, and two new genera of Cruciferæ, *Heterodraba* and *Athy-sanus*. The former is *Draba unilateralis*, M. E. Jones, and the latter *Thysanocarpus pusillus*, Hook. A synopsis of *Sidalcea* is given with five new species. *Hosackia* is represented by four new species, and *Ribes* by two. A synopsis of *Pentstemon* is given and many new Compositæ described, among which is a new genus called *Crockeria*. The sections *Diplacus* and *Eunanus* of *Mimulus* are raised to generic rank, the latter containing 20 species, and then follows a synopsis of *Mimulus*. The only trouble with regard to certain distinctions drawn under *Mimulus*, *Eschscholtzia*, etc., is that one must have fresh specimens for determination, a thing so inconvenient as to largely preclude the use of such characters. *Polygonum Douglasii* and *P. Engelmannii* are two new species separated from *P. tenue*.

In the same number, Mary K. Curran gives a list of plants described by Drs. Albert Kellogg and H. H. Behr, with an attempt at their identification.

Mr. E. L. Greene also describes eight new species of the genus *Astragalus*.

Mr. H. W. Harkness gives a list of the Fungi of the Pacific Coast, with descriptions of several new species, and calls attention to certain generic names which are used twice, principally once among phanerogams and again among fungi, such as *Antennaria*, *Læstadia*, *Phyllactinia*, *Clypeola*, *Eurotia*. In the last two instances the termination is *um* in the case of the fungus, too close a resemblance, but not so absolutely inexcusable as in the other cases given.

Altogether, the *Bulletin* surprises one with its evidence of great botanical activity upon our Pacific Coast.

Canadian Filicineæ. Macoun & Burgess. From the Trans. Roy. Soc. Canada. Read May 23, 1884.

This is a sumptuously printed pamphlet of over sixty pages, and is intended to be all that is necessary for a Canadian pteridologist. There are 64 species given, with references to literature, synonymy, descriptions, stations and collectors. A history of the subject, remarks upon distribution, and a short account of the life history of Ferns prefaces the synopsis. Two tables give some interesting views as to distribution. The first is made upon the basis of Mr. Redfield's division of the North American species into six great classes, the 64 Canadian species being distributed as follows: Cosmopolitan, 4; Boreal, 23; Appalachian, 26; Pacific, 10; New Mexican, 1 (*Cheilanthes lanuginosa*); Tropical, 0. Twenty of the species are peculiar to North America. The second table divides the Dominion into five botanical areas, which show the following distribution of species: Atlantic Provinces and Eastern Quebec, 54; Ontario